Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-17. (Canceled)

18. (Original) A method for determining the rate of degradation of a biopolymer, comprising;

a) enriching a first sample biopolymer pool with stable isotope-labeled monomer;

b) collecting an aliquot of the first sample of biopolymer;

c) measuring the relative abundance of monoisotopic and isotopomeric peaks in the first sample;

d) collecting a second aliquot of the first sample of biopolymer;

e) measuring the relative abundance of monoisotopic and isotopomeric peaks in the second aliquot;

f) calculating the difference between the relative abundance of monoisotopic and isotopomeric peaks measured for the second sample and the first sample;

g) dividing the calculated difference between the relative abundance of monoisotopic and isotopomeric peaks by the time duration between the first and second aliquot and therefrom determining the rate of polymer degradation.

19. (Original) The method of claim 18, wherein the biopolymer is a nucleic acid, a protein, a polypeptide, a peptide, a complex carbohydrate, or a lipid.

20. (Original) The method of claim 19, wherein the nucleic acid is a DNA, a complementary DNA, a ribosomal DNA, a RNA, a transfer RNA, a messenger RNA, or a nuclear RNA.

21. (Original) The method of claim 18, wherein the stable isotope-labeled monomer is a deoxynucleic acid, a ribonucleic acid, an amino acid, a sugar, or a fatty acid.

22. (Original) The method of claim 18, wherein the biopolymer degradation is measured in an organism, an isolated cell, or a cell free system.

23. (Original) The method of claim 18, wherein the biopolymer is separated to form a group of parent biopolymers.

24. (Original) The method of claim 23, wherein the parent biopolymer is fragmented.

25. (Original) The method of claim 24, wherein the biopolymer is fragmented by means of an enzyme, a chemical means, or physical stress.

26. (Original) The method of claim 25, wherein the enzyme is a protease, a nuclease, or a lipase.

27. (Original) The method of claim 25, wherein the chemical means is cyanogen bromide, or sodium borohydride.

28. (Original) The method of claim 25, wherein the protease is trypsin, chymotrypsin, or papain.

29. (Original) The method of claim 18, wherein the relative abundance of monoisotopic and isotopomeric peaks are corrected for the synthesis of new biopolymer.

30. (Original) The method of claim 29, wherein the relative abundance of newly synthesized biopolymer is determined in a second control sample which has been depleted of unlabeled monomer and incubated with stable isotope-labeled monomer for a time period sufficient for new biopolymer synthesis, the relative abundance of monoisotopic and

isotopomeric peaks are determined at the time points used for the first sample; and the difference between the relative abundance of monoisotopic and isotopomeric peaks from the first and second sample is determined.